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EXAMINER	
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ART UNIT	PAPER NUMBER
2628	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/039,187	YU ET AL.	
	Examiner	Art Unit	
	ROBERTA PRENDERGAST	2628	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *27 April 2009*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *24-46* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *24-46* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 112

Examiner acknowledges the amendment to claims 30-34 and 41-46, filed on 4/27/2009, which overcomes the rejection under 35 USC § 112, first paragraph, and therefore the rejection of claims 30-34 and 41-46 under 35 USC § 112, first paragraph, is hereby withdrawn.

Examiner acknowledges the amendment to claim 31, filed on 4/27/2009, which overcomes the rejection under 35 USC § 112, second paragraph, and therefore the rejection of claim 31 under 35 USC § 112, second paragraph, is hereby withdrawn.

Claim Rejections - 35 USC § 101

Examiner acknowledges the amendment to claims 24-34, filed 4/27/2009, that overcomes the rejection under *35 USC § 101* and therefore the rejection of claims 24-34 under *35 USC § 101* is hereby withdrawn.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 24-46 are rejected under 35 U.S.C. 103(a) as being unpatentable over Maya Unlimited 2.0, User's Guide © 1998-1999, 59 pages, in view of Konno et al. U.S. Patent No. 5619625.

Referring to claim 24, Maya Unlimited 2.0 teaches a method for interfacing with multiple surfaces within a computer-aided drawing environment, comprising:

using a computer system, determining that a first surface of a drawing comprises a first plurality of curves constituting a P x 1 surface condition, a P x 1 surface condition being defined by a number of first curves equal to P and only one second curve, wherein P is an integer greater than zero (Pages 20-21, Extruding Surfaces; Pages 21-22, Choosing the extrude style; Page 34, Adding curves to Lofted surfaces; Page 43, Using the Birail 1 Tool, i.e. once an NxM surface has been generated via extrusion, lofting or the Birail Tools, it is understood that additional curves may be added/selected such that a first surface having a Px1 surface condition is determined, see page 16, Installing Maya and Transition Guide for Maya IRIX Users; page 17, About This Book, i.e. it is understood that instructions for installing software and using the software with either the Windows NT operating system or IRIX indicates that the Maya software is installed in a computer system executing the method steps as described);

using a computer system, determining that a second surface of a drawing comprises a second plurality of curves constituting a first N x M surface condition, a first N x M surface condition being defined by a number of third curves equal to N and a number of fourth curves equal to M, wherein N and M are integers greater than one (Pages 20-21, Extruding Surfaces; Pages 21-22, Choosing the extrude style; Page 34,

Adding curves to Lofted surfaces; Page 43, Using the Birail 1 Tool, i.e. once an NxM surface has been generated via extrusion, lofting or the Birail Tools, it is understood that additional curves may be added/selected such that a first surface having a Px1 surface condition is determined adjacent to a second NxM surface having a first NxM surface condition defined by a number of third curves equal to N and a number of fourth curves equal to M wherein N and M are integers greater than one, see page 16, Installing Maya and Transition Guide for Maya IRIX Users; page 17, About This Book, i.e. it is understood that instructions for installing software and using the software with either the Windows NT operating system or IRIX indicates that the Maya software is installed in a computer system executing the method steps as described);

using a computer system, converting the P x 1 surface condition of the first surface into a second N x M surface condition, the second N x M surface condition being defined by a number of fifth curves equal to N and a number of sixth curves equal to M, wherein N and M are integers greater than one; constructing an N x M surface under the second N x M surface condition (Page 34, Adding curves to Lofted surfaces; Page 43, Using the Birail 1 Tool, i.e. curves are added adjacent to an NxM lofted surface such that a Px1 surface condition is identified and then an NxM surface is generated adjacent to the existing NxM surface wherein the second NxM surface is defined by a number of fifth curves equal to N and a number of sixth curves equal to M, see page 16, Installing Maya and Transition Guide for Maya IRIX Users; page 17, About This Book, i.e. it is understood that instructions for installing software and using the software with either the Windows NT operating system or IRIX indicates that the Maya

software is installed in a computer system executing the method steps as described); and

using a computer system, modifying the second N x M surface to edit a drawing (Pages 28-30, Editing the extruded surface using manipulators; Page 39, Editing part of a Lofted Surface; Page 48-49, Editing the Single Birail in the Attribute Editor, i.e. all of the NxM surfaces generated via the Extrude, Loft and Birail Tools may be modified to edit a drawing, see page 16, Installing Maya and Transition Guide for Maya IRIX Users; page 17, About This Book, i.e. it is understood that instructions for installing software and using the software with either the Windows NT operating system or IRIX indicates that the Maya software is installed in a computer system executing the method steps as described).

Maya Unlimited 2.0 does not specifically teach wherein converting the P x 1 surface condition of the first surface into a second N x M surface condition, wherein the second NxM surface condition is converted to match the NxM surface condition of the second surface as claimed.

Konno et al. teaches generating auxiliary curves that are substantially continuous with any adjoining surfaces of a surface such that the NxM surface condition of a first surface matches the NxM surface condition of a second surface (Figs. 20-21; column 5, lines 20-29 and 35-48, i.e. the G^1 continuity of the boundary curve is checked at the endpoints and saved in memory and then used as the condition of continuity when generating auxiliary curves thereby ensuring that the auxiliary curve is continuous with any adjoining surfaces of the surface for which the auxiliary curve is generated thus

indicating that a first NxM surface generated adjacent to a second NxM surface would have a NxM surface condition to match the second NxM surface condition of the second surface in order to ensure continuity between the adjacent surfaces).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the method of Maya Unlimited 2.0 to include the teachings of Konno et al. thereby providing a free-form surface generation method that has the following advantageous features; (1) joining smoothly two adjacent free-form surfaces sharing a boundary curve of any type (e.g., composite curve) by creating interior control points determined by the condition of connection on the boundary, which is derived from the condition of continuity on the boundary, which is determined by the boundary curve and other curves connected thereto; (2) generating free-form surfaces smoothly connected to each other by creating the control points for all the boundary curves and combining those control points; (3) generating a free-form surface in (2) which is smoothly joined to adjacent Gregory patches; (4) generating a free-form surface in (2) which is smoothly joined to adjacent rational boundary Gregory patches; (5) representing complex curve mesh by as few curves as possible in (2); (6) interpolating only one, if possible, surface into curve mesh in (2); and (7) keeping C^n continuity on a surface within the boundary curves (Konno et al. column 3, lines 8-27).

Referring to new claim 25, the rationale for claim 24 is incorporated herein, Maya Unlimited 2.0, as modified above, teaches the method of Claim 24, wherein converting the P x 1 surface condition of the first surface into the second N x M surface condition further comprises generating at least one auxiliary curve that is compatible

with the number of first curves and the only one second curve that define the P x 1 surface condition (see page 20, second figure, i.e. the extruded auxiliary curves are known to be identical to the profile curve and thus have the same degree and number of knots thus indicating their compatibility with the profile curves from which they are extruded) but does not specifically teach generating at least one auxiliary curve that is substantially continuous with any adjoining surfaces of a surface having the P x 1 surface condition.

Konno et al. teaches generating at least one auxiliary curve that is substantially continuous with any adjoining surfaces of the first surface (Figs. 20-21; column 5, lines 20-29 and 35-48, i.e. the G^1 continuity of the boundary curve is checked at the endpoints and saved in memory and then used as the condition of continuity when generating auxiliary curves thereby ensuring that the auxiliary curve is continuous with any adjoining surfaces of the surface for which the auxiliary curve is generated).

The rationale for combining Maya Unlimited 2.0 with the teachings of Konno et al. as found in the motivation statement of claim 24 is incorporated herein.

Referring to claim 26, the rationale for claim 24 is incorporated herein, Maya Unlimited 2.0, as modified above, teaches the method of Claim 24, wherein converting the P x 1 surface condition of the first surface into the second N x M surface condition further comprises replacing the P x 1 surface condition with the second N x M surface condition (Pages 20-21, Extruding Surfaces; Pages 21-22, Choosing the extrude style, i.e. a plurality of profile and guiding/path curves are extruded from the input profile and

path curves in order to generate an NxM surface thereby creating an N x M surface condition to replace the Px1 surface condition).

Konno et al. teaches generating at least one auxiliary curve that is substantially continuous with any adjoining surfaces of the first surface (Figs. 20-21; column 5, lines 20-29 and 35-48, i.e. the G^1 continuity of the boundary curve is checked at the endpoints and saved in memory and then used as the condition of continuity when generating auxiliary curves thereby ensuring that the auxiliary curve is continuous with any adjoining surfaces of the surface for which the auxiliary curve is generated).

The rationale for combining Maya Unlimited 2.0 with the teachings of Konno et al. as found in the motivation statement of claim 24 is incorporated herein.

Referring to claim 27, the rationale for claim 24 is incorporated herein, Maya Unlimited 2.0, as modified above, teaches the method of claim 24 wherein converting the Px1 surface condition into an N x M surface condition comprises generating an NxM surface condition defined by the third and fourth curves such third and fourth curves are defined by mathematical equations all having an order no greater than mathematical equations defining the first and second curves (Pages 20-21, Extruding Surfaces; Pages 21-22, Choosing the extrude style, i.e. extruding a plurality of curves from the input profile curve and path/guiding curve such that an NxM surface is generated/extruded having N profile curves and M guiding/path curves is understood to be generating N third curves and M fourth curves having an order no greater than the input profile and path curves from which they are being extruded).

Referring to claim 28, the rationale for claim 24 is incorporated herein, Maya Unlimited 2.0, as modified above, teaches the method of claim 24 but does not specifically teach processing the first curves and the second curve so that each one of the first curves and second curve are compatible with each other of first curves and the second curve.

Konno et al. teaches processing the first curves and the second curve so that each one of the first curves and second curve are compatible with each other of first curves and the second curve (Fig. 16; column 11, lines 57-65, i.e. it is understood that generating a curve mesh in which the various Gregory patches that correspond to the various first curves are joined together at the second boundary curves is processing the first curves and second curve so that they are compatible with each other).

The rationale for combining Maya Unlimited 2.0 with the teachings of Konno et al. as found in the motivation statement of claim 24 is incorporated herein.

Referring to claim 29, the rationale for claim 24 is incorporated herein, Maya Unlimited 2.0, as modified above, teaches the method claim 24, but does not specifically teach modifying additional surfaces having the NxM surface condition to edit the drawing.

Konno et al. teaches further modifying additional surfaces having the NxM surface condition to edit the drawing (Fig. 16; column 11, lines 57-65, i.e. it is understood that generating a curve mesh in which the various Gregory patches that correspond to the various first curves are modified/joined together at the second

boundary curves is modifying the additional surfaces having the NxM surface condition to edit the drawing).

The rationale for combining Maya Unlimited 2.0 with the teachings of Konno et al. as found in the motivation statement of claim 24 is incorporated herein.

Referring to claim 30, Maya Unlimited 2.0 teaches a method for interfacing with a surface within a computer-aided drawing environment, comprising:

using a computing system, determining that a first surface of a drawing comprises a first plurality of curves constituting a P x 1 surface condition, a P x 1 surface condition being defined by a number of first curves equal to P and only one second curve, wherein P is an integer greater than one (Pages 20-21, Extruding Surfaces; Pages 21-22, Choosing the extrude style; Page 42, Creating birail surfaces; Pages 43-49, Using the Birail 1 Tool, i.e. it is understood that the profile curve is the second curve and the first curves P are the two rail curves that are connected to the profile curve such that the surface defined by the profile curve and rail curves is a surface having a P x 1 surface condition, wherein P is greater than one, see page 16, Installing Maya and Transition Guide for Maya IRIX Users; page 17, About This Book, i.e. it is understood that instructions for installing software and using the software with either the Windows NT operating system or IRIX indicates that the Maya software is installed in a computer system that is capable of executing the method steps as described);

in response to determining that the plurality of curves constitute a P x 1 surface condition and using the computing system, converting the P x 1 surface condition into

an N x M surface condition by generating at least one auxiliary curve that is compatible with the number of first curves and the only one second curve that define the P x 1 surface condition, the N x M surface condition being defined by a number of third curves equal to N and a number of fourth curves equal to M, wherein N and M are integers greater than one (Pages 43-49, Using the Birail 1 Tool, i.e. the left hand figure on page 43 shows a 2x1 surface comprised of two rail/guiding curves and a single profile curve thus indicating a Px1 surface condition and the figures on the right and bottom show an NxM surface extruded from the 2x1 surface consisting of two rail/guiding curves and ten profile curves thus indicating that the Px1 surface condition is now an NxM surface condition), wherein each of the third and fourth curves are of the same mathematical degree as the first and second curves to be compatible with the first and second curves; constructing an N x M surface under the N x M surface condition (Pages 43-49, Using the Birail 1 Tool, i.e. the left hand figure on page 43 shows a 2x1 surface comprised of two rail/guiding curves and a single profile curve thus indicating a Px1 surface condition and the figures on the right and bottom show an NxM surface extruded from the 2x1 surface consisting of two rail/guiding curves and ten profile curves thus indicating that the Px1 surface condition is now an NxM surface condition, since NURBS surfaces are created by default (see page 44 and 48, Output Geometry) and wherein the transform control allows the user to specify whether the profile curves swept along the rail curves are scaled proportionally or non-proportionally (see pages 44-45, Controlling the resulting transformation) then the third and fourth curves are understood to be mathematically filling the space of the surface plane defined by the profile and rail

curves, see page 16, Installing Maya and Transition Guide for Maya IRIX Users; page 17, About This Book, i.e. it is understood that instructions for installing software and using the software with either the Windows NT operating system or IRIX indicates that the Maya software is installed in a computer system that is capable of executing the method steps as described); and

using the computing system, modifying the N x M surface to edit a drawing (Pages 28-30, Editing the extruded surface using manipulators, i.e. the extruded NxM surface may be edited by dragging the manipulators thus indicating that the NxM surface is being modified to edit the drawing, see page 16, Installing Maya and Transition Guide for Maya IRIX Users; page 17, About This Book, i.e. it is understood that instructions for installing software and using the software with either the Windows NT operating system or IRIX indicates that the Maya software is installed in a computer system that is capable of executing the method steps as described).

Maya Unlimited 2.0 does not specifically teach generating at least one auxiliary curve that is substantially continuous with any adjoining surfaces of a surface having the P x 1 surface condition.

Konno et al. teaches generating at least one auxiliary curve that is substantially continuous with any adjoining surfaces of the first surface (Figs. 20-21; column 5, lines 20-29 and 35-48, i.e. the G^1 continuity of the boundary curve is checked at the endpoints and saved in memory and then used as the condition of continuity when generating auxiliary curves thereby ensuring that the auxiliary curve is continuous with any adjoining surfaces of the surface for which the auxiliary curve is generated).

The rationale for combining Maya Unlimited 2.0 with the teachings of Konno et al. as found in the motivation statement of claim 24 is incorporated herein.

Referring to claim 31, claim 31 recites all of the elements of claims 26 and 30 and therefore the rationale for the rejection of claims 26 and 30 are incorporated herein.

Referring to claim 32, claim 32 recites all of the elements of claims 27 and 30 and therefore the rationale for the rejection of claims 27 and 30 are incorporated herein.

Referring to claim 33, claim 33 recites all of the elements of claims 28 and 30 and therefore the rationale for the rejection of claims 28 and 30 are incorporated herein.

Referring to claim 34, claim 34 recites all of the elements of claims 29 and 30 and therefore the rationale for the rejection of claims 29 and 30 are incorporated herein.

Referring to claim 35, the rationale for claim 24 is incorporated herein, Maya Unlimited 2.0, as modified above, teaches all of the elements of claim 35 that is similar in scope to claim 24 above and further teaches a software program for performing the method of claim 24 using the IRIX or Windows NT operating systems (see page 16, Installing Maya and Transition Guide for Maya IRIX Users; page 17, About This Book, i.e. it is understood that instructions for installing software and using the software with either the Windows NT operating system or IRIX indicates that the Maya software is installed in a computer system running the operating systems described).

Maya Unlimited 2.0 does not specifically teach a software program stored on a computer readable medium and operable, when executed on a processor to perform the method as claimed.

Konno et al. teaches a computer-aided design (CAD) system and apparatus having a user interface, receiving means, processing means and memory means for receiving and processing curve mesh data to generate surfaces and storing said surfaces in memory (see Fig. 1; column 4, lines 39-62; column 13-14, lines 24-18).

Therefore it would have been obvious to one having ordinary skill in the art at the time the invention was made that a computer aided drafting system capable of performing the method described would necessarily comprise a software program stored on a computer readable medium and operable, when executed on a processor, as part of a computer system having a display unit and an input device, to perform the methods of claim 24 as described above.

Referring to claim 36, claim 36 recites all of the elements of claims 25 and 35 and therefore the rationale for the rejection of claims 25 and 35 are incorporated herein.

Referring to claim 37, claim 37 recites all of the elements of claims 26 and 35 and therefore the rationale for the rejection of claims 26 and 35 are incorporated herein.

Referring to claim 38, claim 38 recites all of the elements of claims 27 and 35 and therefore the rationale for the rejection of claims 27 and 35 are incorporated herein.

Referring to claim 39, claim 39 recites all of the elements of claims 28 and 35 and therefore the rationale for the rejection of claims 28 and 35 are incorporated herein.

Referring to claim 40, claim 40 recites all of the elements of claims 29 and 35 and therefore the rationale for the rejection of claims 29 and 35 are incorporated herein.

Referring to claim 41, the rationale for claim 41 is incorporated herein, Maya Unlimited 2.0, as modified above, teaches all of the elements of claim 41 that is similar

in scope to claim 30 above and further teaches a software program for performing the method of claim 30 using the IRIX or Windows NT operating systems (see page 16, Installing Maya and Transition Guide for Maya IRIX Users; page 17, About This Book, i.e. it is understood that instructions for installing software and using the software with either the Windows NT operating system or IRIX indicates that the Maya software is installed in a computer system running the operating systems described).

Maya Unlimited 2.0 does not specifically teach a system comprising a computer system having a display unit and an input device and a computer readable medium coupled to the computer system, the computer readable medium comprising a software program operable to perform the method as claimed.

Konno et al. teaches a computer-aided design (CAD) system and apparatus having a user interface, receiving means, processing means and memory means for receiving and processing curve mesh data to generate surfaces and storing said surfaces in memory (see Fig. 1; column 4, lines 39-62; column 13-14, lines 24-18, i.e. it is understood that a CAD system having a user interface, receiving means, processing means and memory means for receiving and processing curve mesh data to generate surfaces is descriptive of a computer system that includes a display unit for displaying the generated surfaces, an input device for interacting with the user interface, and a computer readable medium coupled to the computer system since these devices are inherent to any computer-aided design (CAD) system).

Therefore it would have been obvious to one having ordinary skill in the art at the time the invention was made that a computer aided drafting system capable of

performing the method described would necessarily comprise a computer system having a display unit and an input device; a computer readable medium coupled to the computer system, the computer readable medium comprising a software program operable to perform the method of claim 30 as described above.

Referring to claim 42, claim 42 recites all of the elements of claims 25 and 41 and therefore the rationale for the rejection of claims 25 and 41 are incorporated herein.

Referring to claim 43, claim 43 recites all of the elements of claims 26 and 41 and therefore the rationale for the rejection of claims 26 and 41 are incorporated herein.

Referring to claim 44, claim 44 recites all of the elements of claims 27 and 41 and therefore the rationale for the rejection of claims 27 and 41 are incorporated herein.

Referring to claim 45, claim 45 recites all of the elements of claims 28 and 41 and therefore the rationale for the rejection of claims 28 and 41 are incorporated herein.

Referring to claim 46, claim 46 recites all of the elements of claims 29 and 41 and therefore the rationale for the rejection of claims 29 and 41 are incorporated herein.

Response to Arguments

Applicant's arguments, see Remarks, pages 9-10, filed 4/27/2009, with respect to claims 30-34 and 41-46 have been fully considered and are persuasive. The rejection of claims 30-34 and 41-46 under 35 USC § 112, first paragraph, has been withdrawn.

Applicant's arguments, see Remarks, page 10, filed 4/27/2009, with respect to claims 24-34 have been fully considered and are persuasive. The rejection of claims 24-34 under 35 USC § 101 has been withdrawn.

Applicant's arguments filed 4/27/2009 have been fully considered but they are not persuasive.

Applicant argues, with respect to claim 24, that "Claim 24 is allowable at least because the cited references fail to disclose, teach, or suggest, "using a computer system, determining that a first surface of a drawing comprises a first plurality of curves constituting a P x 1 surface condition" in addition to "determining that a second surface of a drawing comprises a second plurality of curves constituting a first N x M surface condition. ... Because the surface that is drawn by the chosen extrusion style in Maya is not defined and in fact is not even drawn until sometime after the extrusion style is chosen and applied, the choosing act itself fails to disclose "determining that a first surface of a drawing comprises a first plurality of curves constituting a P x 1 surface condition" and "determining that a second surface of a drawing comprises a second plurality of curves constituting a first N x M surface condition." ..., the Office Action fails to indicate any portion of Maya that allegedly discloses the claimed determining steps with reference to either the lofted surface or the added curve surfaces once they are drawn. It could not because there is none."

Examiner respectfully submits that Applicants specification teaches wherein a surface is determined to be a Px1 surface or an NxM surface based on the number of section curves and guide curves that, in combination, may define a surface, see pages 9-10, lines 21-3. Thus, as defined in the specification, Maya teaches determining that a first surface of a drawing constitutes a Px1 surface condition when the surface is

defined by P section curves and only 1 guiding curve, and determining that a second surface of a drawing comprises an NxM surface when the surface is defined by N section curves and M guiding curves, see Pages 20-21, Extruding Surfaces; Pages 21-22, Choosing the extrude style; Page 34, Adding curves to Lofted surfaces; Page 43, Using the Birail 1 Tool, i.e. once an NxM surface has been generated via extrusion, lofting or the Birail Tools, it is understood that additional curves may be added/selected such that a first surface having a Px1 surface condition is determined. It is noted that Applicant does not specifically disclose how the determining step is performed and therefore any method of defining a surface in a U,V direction is sufficient to disclose such limitations.

Applicant next argues, with respect to claim 24, that "Claim 24 is allowable also at least because the cited references fail to disclose, teach, or suggest, "converting the P x 1 surface condition of the first surface into a second N x M surface condition to match the N x M surface condition of the second surface." ..., Maya merely discloses generating the surface of the new curve extension, which fails to disclose converting anything that can be considered a P x 1 surface condition of the curve extension once it is generated, much less converting a P x 1 surface condition of the curve extension to match an N x M surface condition of the lofted surface. ..., Claim 24 does not recite generating a surface to match the first NxM surface, as the Office Action incorrectly suggests, but rather Claim 24 recites "converting the P x 1 surface condition of the first surface.., to match the N x M surface condition of the second surface." The Office Action thus fails to even expressly assert the proposed Maya-Kono combination

discloses each claim element as arranged in Claim 24 and instead the Office Action incorrectly substitutes its own claim language in its rejection arguments, which is contrary to the M.P.E.P. and established case law.2"

Examiner respectfully submits that Maya Unlimited 2.0 teaches wherein a first surface is comprised of Px1 curves and a second surface is comprised of NxM curves such that once an NxM surface has been generated via extrusion, lofting or the Birail Tools, it is understood that additional curves may be added/selected such that a first Px1 surface having a Px1 surface condition is determined and then a second NxM surface having a second NxM surface condition is generated on the Px1 surface, see Page 34, Adding curves to Lofted surfaces. Konno et al. teaches wherein two surfaces are converted such that additional curves and/or knots are added to a first surface until the number of curves and/or knots match the number of curves and/or knots of the second surface in order to ensure continuity across the two surfaces thus teaching wherein the surface condition of the first surface is converted to match the surface condition of the second surface, see Fig. 16; column 11, lines 57-65, thus indicating that the surface condition of the first surface matches (i.e. is continuous with) the surface condition of the second surface. Therefore the advantage to combining Maya Unlimited 2.0 with the teachings of Konno et al. is to provide a free-form surface generation system and method that has the following advantageous features; (1) joining smoothly two adjacent free-form surfaces sharing a boundary curve of any type (e.g., composite curve) by creating interior control points determined by the condition of connection on the boundary, which is derived from the condition of continuity on the boundary, which is

determined by the boundary curve and other curves connected thereto; (2) generating free-form surfaces smoothly connected to each other by creating the control points for all the boundary curves and combining those control points; (3) generating a free-form surface in (2) which is smoothly joined to adjacent Gregory patches; (4) generating a free-form surface in (2) which is smoothly joined to adjacent rational boundary Gregory patches; (5) representing complex curve mesh by as few curves as possible in (2); (6) interpolating only one, if possible, surface into curve mesh in (2); and (7) keeping C^n continuity on a surface within the boundary curves (Konno et al. column 3, lines 8-27).

Applicant then argues, with respect to claim 30, that "The Office Action asserts on pages 13-14 that Maya discloses "converting the P x 1 surface condition into an N x M surface condition,'" which is incorrect at least for reasons analogous to those stated above. The Office Action concedes that Maya fails to disclose performing the claimed converting step by "generating at least one auxiliary curve that is substantially continuous with any adjoining surfaces of the first surface and compatible with the number of first curves and the only one second curve that define the P x 1 surface condition." Office Action at 14. The Office Action relies on Konno to cure the deficiency of Maya, but this is not correct at least because the Office Action fails to clearly indicate which surface of what drawing in Kono allegedly comprises "a first plurality of curves constituting a P x 1 surface condition." Thus, it is unclear what curve in Kono the Office Action considers as meeting the limitation of "generating at least one auxiliary curve that is substantially continuous with any adjoining surfaces of the first surface and compatible with the number of first curves and the only one second curve that define the

P x 1 surface condition." In addition, the Office Action fails to meet the burden of establishing that the cited references show, either individually or in combination, "converting the P x 1 surface condition . . . by generating at least one auxiliary curve" and instead the Office Action merely asserts, incorrectly, that Maya discloses the converting element and that Kono discloses the generating element. As explained by the Federal Circuit, "[i]t is immaterial to the issue, however, that all of the elements were old in other contexts" and that instead "[w]hat must be found obvious to defeat the patent is the claimed combination." Kimberly- Clark Corp. v. Johnson & Johnson, 745 F.2d 1437, 1448, 223 USPQ 603, 609-10 (Fed. Cir. 1984) (emphasis added)."

Examiner respectfully submits that Maya 2.0 teaches generating at least one auxiliary curve that is compatible with the number of first curves and the only one second curve that define the P x 1 surface condition but does not specifically teach generating at least one auxiliary curve that is substantially continuous with any adjoining surfaces of a surface having the P x 1 surface condition, see page 20, second figure, i.e. the extruded auxiliary curves are known to be identical to the profile curve and thus have the same degree and number of knots thus indicating their compatibility with the profile curves from which they are extruded. Konno et al. teaches generating at least one auxiliary curve that is substantially continuous with any adjoining surfaces of the first surface, Figs. 20-21; column 5, lines 20-29 and 35-48, i.e. the G^1 continuity of the boundary curve is checked at the endpoints and saved in memory and then used as the condition of continuity when generating auxiliary curves thereby ensuring that the auxiliary curve is continuous with any adjoining surfaces of the surface for which the

auxiliary curve is generated. Therefore the combination of primary reference Maya 2.0 with secondary reference Konno et al. teaches all of the claim limitations of claim 30 as indicated above.

Applicant then argues, with respect to claim 30, that "Applicants respectfully submit that the Examiner has not provided the requisite teaching, suggestion, or motivation, either in the cited references or in the knowledge generally available to one of ordinary skill in the art at the time of Applicants' invention to modify or combine Maya with the disclosure of Konno in the manner the Examiner proposes. Applicants' claims are allowable for at least this additional reason."

In response to applicant's argument that there is no suggestion to combine the references, the examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988)and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). In this case, the advantage to combining Maya Unlimited 2.0 with the teachings of Konno et al. is to provide a free-form surface generation system and method that has the following advantageous features; (1) joining smoothly two adjacent free-form surfaces sharing a boundary curve of any type (e.g., composite curve) by creating interior control points determined by the condition of connection on the boundary, which is derived from the condition of continuity on the boundary, which is determined by the boundary curve and other

curves connected thereto; (2) generating free-form surfaces smoothly connected to each other by creating the control points for all the boundary curves and combining those control points; (3) generating a free-form surface in (2) which is smoothly joined to adjacent Gregory patches; (4) generating a free-form surface in (2) which is smoothly joined to adjacent rational boundary Gregory patches; (5) representing complex curve mesh by as few curves as possible in (2); (6) interpolating only one, if possible, surface into curve mesh in (2); and (7) keeping C^n continuity on a surface within the boundary curves (Konno et al. column 3, lines 8-27).

Applicant next argues that "... the Examiner has merely pieced together disjointed portions of references, with the benefit of hindsight using Applicants' claims as a blueprint, in an attempt to reconstruct Applicants' claims...", "...Even a determination that it would have been obvious to one of ordinary skill in the art at the time of the invention to try the proposed modification or combination is not sufficient to establish a prima facie case of obviousness. See In re Fine, 837 F.2d 1071, 1075, 5 U.S.P.Q.2d 1596, 1599 (Fed. Cir. 1988). In addition, the M.P.E.P. and the Federal Circuit repeatedly warn against using an applicants' disclosure as a blueprint to reconstruct the claimed invention...", and "With regard to independent Claims 24, 30, 35, and 41, the Examiner states the that "it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify, the method of Maya Unlimited 2.0 to include the teachings of Konno et al. thereby providing a free-form surface generation method..." Office Action at 8-9. As motivation for doing so, the Examiner refers to several advantages purported to be provided by the free-form

surface generation method of Konno. Id.; see also page 22. Thus, it appears that the Examiner has merely proposed alleged advantages for combining Maya with Konno (advantages that Applicants do not admit could even be achieved by combining these references in the manner the Examiner proposes)."

In response to applicant's argument that the examiner's conclusion of obviousness is based upon improper hindsight reasoning, it must be recognized that any judgment on obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning. But so long as it takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made, and does not include knowledge gleaned only from the applicant's disclosure, such a reconstruction is proper. See *In re McLaughlin*, 443 F.2d 1392, 170 USPQ 209 (CCPA 1971).

Applicant then argues, with respect to claims 24, 30, 35, and 41, that "The Examiner has not pointed to any portions of the cited references, however, that would teach, suggest, or motivate one of ordinary, skill in the art at the time of invention to incorporate the calculation of cross boundary derivatives on all the boundary curves forming a face as disclosed in Konno with the methods of generating surfaces disclosed in Maya. In other words, the alleged advantages of the systems, as provided by the Examiner, do not provide an explanation as to: (1) why it would have been obvious to one of ordinary skill in the art at the time of Applicants' invention (without using Applicants" claims as a guide) to modify the particular techniques disclosed in Maya with the cited disclosure in Konno; (2) how one of ordinary skill in the art at the time of

Applicants' invention would have actually done so, and (3) how doing so would purportedly meet the limitations of Applicants' claims in a successful manner. Indeed, if it were sufficient for Examiners to merely point to a purported advantage of one reference and conclude that it would have been obvious to combine of modify, that reference with other references simply based on that advantage (which, as should be evident from the case law discussed above, it certainly is not), then virtually any two or more references would be combinable just based on the fact the one reference states an advantage of its system. Of course, as the Federal Circuit has made clear and as discussed above, that is not the law."

Examiner respectfully submits that the Maya Unlimited 2.0 reference is not merely an extrusion method as indicated by Applicant, but a system and method for creating and editing surfaces and is not merely limited to extrusion, see page 19, and further teaches wherein the edge blending option of first edge is used such that the constructed surface is tangent continuous to the surface underlying the profile, see page 46, Blending the profile curves, and wherein the Tangent Continuity Profile toggle lets tangent continuity be turned on or off for the profile curve, see page 49. Konno et al. teaches generating auxiliary curves that are substantially continuous with any adjoining surfaces of a surface, see Figs. 20-21; column 5, lines 20-29 and 35-48.

Therefore the advantage to combining Maya Unlimited 2.0 with the teachings of Konno et al. is to provide a free-form surface generation system and method that has the following advantageous features; (1) joining smoothly two adjacent free-form surfaces sharing a boundary curve of any type (e.g., composite curve) by creating

interior control points determined by the condition of connection on the boundary, which is derived from the condition of continuity on the boundary, which is determined by the boundary curve and other curves connected thereto; (2) generating free-form surfaces smoothly connected to each other by creating the control points for all the boundary curves and combining those control points; (3) generating a free-form surface in (2) which is smoothly joined to adjacent Gregory patches; (4) generating a free-form surface in (2) which is smoothly joined to adjacent rational boundary Gregory patches; (5) representing complex curve mesh by as few curves as possible in (2); (6) interpolating only one, if possible, surface into curve mesh in (2); and (7) keeping C^n continuity on a surface within the boundary curves (Konno et al. column 3, lines 8-27).

Applicant's arguments with respect to new claims 25-46 have been considered but are moot in view of the new ground(s) of rejection.

Examiner respectfully submits that, at the time applicant argued against the references, applicant was arguing against limitations that had not been previously claimed and thus were not previously examined nor addressed in the previous office action and requests that applicant look to the office action provided above wherein these newly added claims and limitations have now been examined and addressed.

Examiner note: The Applicant finishes the arguments by stating that the above arguments and amendments are without prejudice or disclaimer. Additionally, Applicants have merely discussed example distinctions from the references cited by the Examiner. Other distinctions may exist, and Applicants reserve the right to discuss these additional distinctions in a later Response or on Appeal, if appropriate. By not

responding to additional statements made by the Examiner, Applicants do not acquiesce to the Examiner's additional statements. The example distinctions discussed by Applicants are sufficient to overcome the Examiner's rejections. Since it is required that a complete response to an action includes a response to each and every one of the grounds of rejection applied, and since the Examiner assumes both knowledge of this requirement by the Applicant and the Applicant's good faith attempt to further prosecution, the Examiner will assume that the response is indeed complete, and that all grounds of rejection contested by the Applicant have been addressed.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to ROBERTA PRENDERGAST whose telephone number is (571)272-7647. The examiner can normally be reached on M-F 8:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ulka Chauhan can be reached on (571) 272-7782. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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